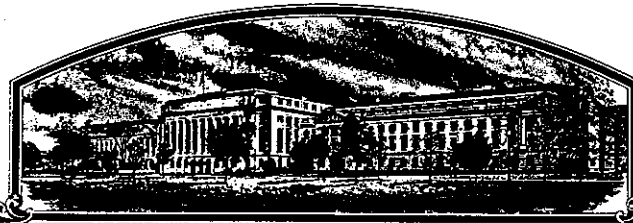


No.



9600157

# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

**NDSH Research Foundation**

Whereas, THERE HAS BEEN PRESENTED TO THE

**Secretary of Agriculture**

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR USING IT FOR ANY OF THE ABOVE PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN WITNESS WHEREOF, THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF SEED, AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE VARIETY. (U.S. PAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

**WHEAT**

**'Ernest'**

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this twenty-eighth day of June in the year of our Lord one thousand nine hundred and ninety-six.

Attest:

*Marsha A. Stanton*  
Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

*Van F. Feltman*  
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
SCIENCE DIVISION - PLANT VARIETY PROTECTION OFFICE

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a).

## APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate)		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME
NDSU Research Foundation		ND677	Ernest
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)		5. TELEPHONE (include area code)	FOR OFFICIAL USE ONLY PVPO NUMBER 9600157
c/o Executive Director PO Box 5014 Fargo, ND 58105-5014		701-231-8931	
7. GENUS AND SPECIES NAME		6. FAX (include area code)	FILING DATE
Triticum aestivum L.		701-231-1013	3-13-96
8. FAMILY NAME (Botanical)		FILING AND EXAMINATION FEE	
Gramineae		2450.00	
9. CROP KIND NAME (Common name)		DATE	
Hard red spring wheat		3-10-96	
10. IF THE APPLICANT NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) (Common name)		CERTIFICATION FEE	
501 (c) (3) Corporation - NDSU Research Foundation		300.00	
11. IF INCORPORATED, GIVE STATE OF INCORPORATION		DATE	
North Dakota		5-28-96	
12. DATE OF INCORPORATION		14. TELEPHONE (include area code)	
		701-231-8143	
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS		15. FAX (include area code)	
Richard C. Froberg Department of Plant Sciences North Dakota State University PO Box 5051 Fargo, ND 58105-5051		701-231-8474	
Dale Zetocha Executive Director NDSU Research Foundation PO Box 5014 Fargo, ND 58105-5014			
16. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)			
a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of the Variety d. <input checked="" type="checkbox"/> Exhibit D. Additional Description of the Variety e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Applicant's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties verification that tissue culture will be deposited and maintained in a public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,450), made payable to "Treasurer of the United States" (Mail to PVPO)			
17. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY, AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act?)			
<input checked="" type="checkbox"/> YES (If "yes," answer items 18 and 19 below) <input type="checkbox"/> NO (If "no," go to item 20)			
18. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?		19. IF "YES" TO ITEM 18, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?	
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		<input checked="" type="checkbox"/> FOUNDATION <input checked="" type="checkbox"/> REGISTERED <input checked="" type="checkbox"/> CERTIFIED	
20. HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES?			
<input checked="" type="checkbox"/> YES (If "yes," give names of countries and dates) <input type="checkbox"/> NO			
USA - Release date March 10, 1995 USA - First seed sale November 15, 1995			
21. The applicant(s) declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.			
The undersigned applicant(s) is(are) the owner(s) of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.			
Applicant(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.			
SIGNATURE OF APPLICANT (Owner(s))		SIGNATURE OF APPLICANT (Owner(s))	
Dale Zetocha			
NAME (Please print or type)		NAME (Please print or type)	
Dale Zetocha			
CAPACITY OR TITLE	DATE	CAPACITY OR TITLE	DATE
Executive Director NDSU Research Foundation	3/12/96		

EXHIBIT A - ORIGIN AND BREEDING HISTORY  
'ERNEST'

Spring 1985	Original cross made at North Dakota State University (NDSU) greenhouse. Cross number is 85373 Pedigree - ND622*2/Cutless ND 622 = SU7 sib-3//SU28-1*3/Agent
Summer 1985	F <sub>1</sub> plants, NDSU greenhouse.
Summer 1986	F <sub>2</sub> bulked population, NDSU research land.
Summer 1987	F <sub>3</sub> bulked population, NDSU research land.
Spring 1988	F <sub>4</sub> single-seed-descent population, NDSU greenhouse.
Summer 1988	F <sub>5</sub> plant row, NDSU research land.
Summer 1989	F <sub>6</sub> progeny plot, NDSU research land.
Summer 1990	F <sub>7</sub> preliminary yield trial, 3 locations, NDSU research land.
Summer 1991	F <sub>8</sub> elite yield trial, 4 locations, NDSU research land. Seed increase (37 lbs.) Prosper, ND.
Summer 1992-1994	North Dakota HRS wheat variety trial, 4 locations each year. North Dakota HRS wheat off-station trial, 4 locations each year.  Experimental line designation - ND677
Summer 1992-1994	Seed increase by NDSU Seedstocks Project.
Summer 1993-1994	Uniform Regional HRS Wheat Nursery, about 20 locations each year, Upper Midwest/U.S.A.
Summer 1993-1994	Wheat Quality Council test
March 10, 1995	Release date of Ernest.
March 17, 1995	Seed of 'Ernest' (experimental line ND677) distributed to contract seed growers.

Observations indicate Ernest is uniform and stable within commercially acceptable limits for all traits as described in Exhibit C. Uniformity and stability of Ernest were observed 1989 to 1994 for six generations (F<sub>6</sub> - F<sub>11</sub>). Variants (taller plants, 5-12 cm) occurrence at a frequency of 5/10,000 and awnless plant variants at a frequency of 2/10,000.

North Dakota State University  
Loftsgard Hall  
P.O. Box 5051  
 Fargo, North Dakota  
58105-5051 USA

April 11, 1996

Tel. 701.231.7971  
Fax 701.231.8474

Biotechnology  
Breeding  
Forestry  
Genetics  
Horticulture  
Physiology  
Production  
Weed Science

Dr. Alan A. Atchley  
Plant Variety Protection Office  
NAL Building, Room 500  
10301 Baltimore Blvd.  
Beltsville, MD 20705

SUBJECT: PVP Application No. 9600157, Wheat, 'Ernest'

Dear Dr. Atchley:

Following is the information that you requested (letter 3 April 1996) so that the examination of 'Ernest' wheat may be concluded:

*The Variety Release Committee of the North Dakota Agricultural Experiment Station (NDAES) recommended to Dr. Robert Todd, Director, NDAES, that the experimental wheat line ND677 be named Ernest and released as a cultivar. Dr. Todd announced this release through public media on March 10, 1995. Seed of Ernest was distributed by the NDAES through the North Dakota Crop Improvement county groups to experienced seed producers for seed multiplication during the growing season of 1995. These producers were under contract to the Seedstocks Project, Department of Plant Sciences, NDAES, North Dakota State University for the Ernest seed produced. On November 15, 1995, these contracted seed producers were released from their contract and Ernest seed was then available and offered for sale to the public in the U.S.A.*

Exhibit A

*'Cutless' is a commercial cultivar developed and released by the North Dakota Agricultural Experiment Station, North Dakota State University. SU7 and SU28 are public lines developed by Dr. Glenn S. Smith as an employee of North Dakota State University.*

*Selection criteria for the breeding of Ernest wheat were highly heritable traits (i.e., plant height, maturity, disease resistance) in the early segregating*



9600157

Dr. Alan A. Atchley

Page 2

April 11, 1996

generations,  $F_2$  -  $F_5$ . Beginning in the  $F_6$  generation, selection criteria also included lodging resistance, shattering resistance, reaction to wheat stem sawfly, test weight, grain yield and bread making characters (grain protein, milling extraction, dough mixing, loaf volume, etc.). Data were obtained from multiple locations and over years to evaluate and identify the experimental line ND677 that was named Ernest. Overall, the selection criteria were a combination of traits used to identify a superior hard red spring wheat genotype adapted to northwestern North Dakota wheat production where the wheat stem sawfly is a frequent production hazard, and a genotype having acceptable (compared to check cultivars) milling and bread making properties for domestic and export markets.

↑ [Exhibit A: ] AAA 16 May 1996  
Difference between Ernest and Butte 86

*Ernest has solid stem internodes. Butte 86 has hollow stem internodes.*

This information should provide facts for the examination of Ernest wheat.

Sincerely,



Richard C. Frohberg  
Professor

RCF:lh

## EXHIBIT B - NOVELTY STATEMENT

To my knowledge 'Ernest' most nearly resembles 'Amidon'. Differences include, but are not necessarily restricted to, the following:

1. Ernest has solid stem internodes. Amidon has hollow stem internodes.

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
COMMODITIES SCIENTIFIC SUPPORT DIVISION  
BELTSVILLE, MARYLAND 20705

EXHIBIT C  
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY  
WHEAT (TRITICUM SPP.)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT(S)

NDSU Research Foundation

ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code)

PO Box 5014

Fargo, ND. 58105-5014

FOR OFFICIAL USE ONLY

PVPO NUMBER

9600157

VARIETY NAME OR TEMPORARY DESIGNATION

Place the appropriate number that describes the varietal character of this variety in the boxes below.

Place a zero in first box (e.g., 089 or 09) when number is either 99 or less or 9 or less.

## 1. KIND:

1 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

## 2. TYPE:

1 1 = SPRING 2 = WINTER 3 = OTHER (Specify) 2 1 = SOFT 2 = HARD 3 = OTHER (Specify)

2 1 = WHITE 2 = RED 3 = OTHER (Specify)

## 3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

057 FIRST FLOWERING

060 LAST FLOWERING

## 4. MATURITY (50% Flowering):

03 NO. OF DAYS EARLIER THAN 3 1 = ARTHUR 2 = SCOUT 3 = CHRIS

NO. OF DAYS LATER THAN 4 = LEMHI 5 = NUGAINES 6 = LEEDS

## 5. PLANT HEIGHT (From soil level to top of head):

09.4 CM. HIGH

CM. TALLER THAN

07 CM. SHORTER THAN 3 1 = ARTHUR 2 = SCOUT 3 = CHRIS  
4 = LEMHI 5 = NUGAINES 6 = LEEDS

## 6. PLANT COLOR AT BOOTING (See reverse):

3 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

## 7. ANTHUR COLOR:

1 1 = YELLOW 2 = PURPLE

## 8. STEM:

1 Anthocyanin: 1 = ABSENT 2 = PRESENT

1 Waxy bloom: 1 = ABSENT 2 = PRESENT

2 Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT

2 Internodes: 1 = HOLLOW 2 = SOLID

04 NO. OF NODES (Originating from node above ground)

26 CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

## 9. AURICLES:

1 Anthocyanin: 1 = ABSENT 2 = PRESENT

1 Hairiness: 1 = ABSENT 2 = PRESENT

## 10. LEAF:

2 Flag leaf at booting stage: 1 = ERECT 2 = RECURVED  
3 = OTHER (Specify):

2 Flag leaf: 1 = NOT TWISTED 2 = TWISTED

1 Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT

2 Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT

09 MM. LEAF WIDTH (First leaf below flag leaf)

23 CM. LEAF LENGTH (First leaf below flag leaf)

## 11. HEAD:

☒ 1 Density: 1 = LAX 2 = DENSE

☒ 1 Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE  
4 = OTHER (Specify) \_\_\_\_\_

☒ 4 Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

☒ 2 Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED  
5 = BROWN 6 = BLACK 7 = OTHER (Specify) \_\_\_\_\_

☒ 06 CM. LENGTH

☒ 11 MM. WIDTH

## 12. GLUMES AT MATURITY:

☒ 2 Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.)  
3 = LONG (CA. 9 mm.)

☒ 2 Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.)  
3 = WIDE (CA. 4 mm.)

☒ 4 Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED  
4 = SQUARE 5 = ELEVATED 6 = APICULATE

☒ 3 Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

## 13. COLEOPTILE COLOR:

☒ 1 1 = WHITE 2 = RED 3 = PURPLE

## 14. SEEDLING ANTHOCYANIN:

☒ 1 1 = ABSENT 2 = PRESENT

## 15. JUVENILE PLANT GROWTH HABIT:

☒ 2 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

## 16. SEED:

☒ 2 Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

☒ 2 Check: 1 = ROUNDED 2 = ANGULAR

☒ 1 Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

☒ 1 Brush: 1 = NOT COLLARED 2 = COLLARED

☒ 4 Phenol reaction (See Instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN  
4 = BROWN 5 = BLACK

☒ 3 Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) \_\_\_\_\_

☒ 06 MM. LENGTH

☒ 03 MM. WIDTH

☒ 32 GM. PER 1000 SEEDS

## 17. SEED CREASE:

☒ 2 Width: 1 = 60% OR LESS OF KERNEL 'WINOKA'  
2 = 80% OR LESS OF KERNEL 'CHRIS'  
3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

☒ 2 Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT'  
2 = 35% OR LESS OF KERNEL 'CHRIS'  
3 = 50% OR LESS OF KERNEL 'LEMHI'

## 18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

☒ 2 STEM RUST (Race) QFBS, QSHS  
RTQQ, TNMK, RKQS
☒ 2 LEAF RUST (Race) Local
☐ 0 STRIPE RUST (Race) \_\_\_\_\_

☐ 0 LOOSE SMUT

☐ 0 POWDERY MILDEW

☐ 0 BUNT

☐ 0 OTHER (Specify) \_\_\_\_\_

## 19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

☒ 2 SAWFLY

☐ 0 APHID (Bydv.)

☐ 0 GREEN BUG

☐ 0 CEREAL LEAF BEETLE

☐ 0 OTHER (Specify) \_\_\_\_\_

HESSIAN FLY

RACES:

☐ 0 GP

☐ 0 A

☐ 0 B

☐ 0 C

☐ 0 D

☐ 0 E

☐ 0 F

☐ 0 G

## 20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	<u>Amidon</u>	Seed size	<u>Amidon</u>
Leaf size	<u>Amidon</u>	Seed shape	<u>Amidon</u>
Leaf color	<u>Amidon</u>	Coleoptile elongation	<u>Amidon</u>
Leaf carriage	<u>Amidon</u>	Seedling pigmentation	<u>Amidon</u>

## INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

- (a) L.W. Briggie and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.
- (b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)



## EXHIBIT D - ADDITIONAL DESCRIPTION OF VARIETY

When 'Ernest' is compared to 'Stoa', 'Amidon' and 'Grandin' it has wheat stem sawfly resistance as determined by stem cutting percentage and is similar to 'Lew' and 'Cutless' (Table 10).

ERNEST HRS WHEAT

Table 1. Mean grain yield of selected entries in the 1992-94 hard red spring wheat variety trial at North Dakota Agricultural Research Centers.

Variety or line	Dickinson†	Hettinger‡	Williston	North Central
	bu/A			
<u>Conv. ht.</u>				
Stoa	46.6	68.9	54.3	47.9
Butte 86	41.1	70.5	52.1	45.6
Amidon	47.4	74.0	55.9	44.9
Sharp	----	70.1	53.0	44.6
CDC Teal	42.1	65.8	53.3	45.8
AC Domain	35.7	----	49.3	41.9
Kulm	----	74.5	55.4	45.3
Fortuna	----	----	44.3	----
Lew	----	----	51.3	----
Leader	35.8	----	48.2	----
Ernest	50.8	70.1	53.7	42.7
<u>Semidwarf</u>				
Cutless	----	41.7	46.6	----
Rambo	40.2	----	53.4	----
Glenman	----	----	53.6	----
2375	45.1	69.8	57.6	46.1
Grandin	46.8	68.8	56.5	47.1
Norm	----	77.4	56.9	47.5
Hi Line	----	65.0	55.1	39.6
McNeal	55.1	88.6	63.1	49.9

†1993 yield data

‡1992 and 1993 yield data

Table 2. Summary of agronomic performance of selected entries in the 1992-94 hard red spring wheat variety trial at North Dakota Agricultural Research Centers†.

Variety or line	Headed (10)‡	Height (10)	Lodging score (1)	Leaf disease (8)	Test weight (10)	Grain yield (8)
	days	cm	0-9	%	lb/bu	bu/A
<u>Conv. Ht.</u>						
Stoa	65	88	0.3	40	60.0	56.0
Amidon	65	87	0.3	30	60.5	56.5
CDC Teal	63	85	1.8	36	60.2	53.5
Kulm	61	83	0.3	50	62.1	56.5
Ernest	65	86	0.3	31	61.6	53.9
<u>Semidwarf</u>						
2375	62	79	2.2	50	60.8	56.9
Grandin	64	81	0	45	61.2	56.4
Norm	63	77	0.5	26	60.0	58.9
McNeal	66	80	0.8	28	60.2	64.3

†Dickinson, Hettinger, Williston, North Central.

‡Number of tests each trait.

Table 3. Grain yield of selected entries in 1992-94 hard red spring wheat trials conducted by the Williston Research Center.

Variety or line	Williston				Off-station locations†		
	Variety	Early fallow	Recrop	Notill	1992 (5)	1993 (4)	1994 (4)
bu/A							
<u>Conv. Ht.</u>							
Stoa	54.3	56.9	44.1	41.5	57.9	55.4	42.6
Butte 86	52.1	----	----	----	58.5	52.6	40.9
Amidon	55.9	59.5	48.6	44.6	64.2	54.1	43.5
CDC Teal	53.3	----	----	----	----	----	39.5
Kulm	55.4	----	----	----	55.9	----	44.5
Ernest	53.7	54.7	46.5	44.0	60.3	58.0	42.6
<u>Semidwarf</u>							
2375	57.6	58.3	49.3	45.0	64.4	55.5	47.7
Grandin	56.5	56.3	45.5	42.3	60.6	52.5	42.4
Bergen	61.8	59.8	51.4	49.1	68.1	61.3	47.6
Dalen	56.9	56.8	49.7	44.8	66.5	56.7	43.9
Norm	56.9	----	----	----	64.9	54.4	----
Rambo	53.5	----	----	----	----	44.9	35.2
Hi Line	55.1	----	----	----	----	48.2	40.9
McNeal	63.1	----	----	----	----	60.6	46.0

†Locations each year:

1992 - Powers Lake, Arnegard, Newtown, Stanley, Fortuna.

1993 - Arnegard, Newtown, Stanley, Fortuna.

1994 - Arnegard, Newtown, Stanley, Burke County.

Table 4. Summary of agronomic performance of selected entries in the 1992-94 hard red spring wheat trials conducted by the Williston Research Center.

Variety or line	Headed (8)†	Height (17)	Lodging score (2)	Leaf disease (11)	Test weight (26)	Grain yield (25)
	days	cm	%	%	lb/bu	bu/A
<u>Conv. Ht.</u>						
Stoa	62	93	2	43	59.2	51.0
Amidon	62	91	2	29	59.6	53.4
Ernest	61	91	2	33	60.9	52.0
<u>Semidwarf</u>						
2375	60	86	28	52	60.6	54.7
Grandin	61	83	0	48	59.8	51.4
Bergen	61	77	0	18	60.1	57.7
Dalen	59	75	6	34	60.9	54.4

†Number of tests each trait.

Table 5. Grain yield of selected entries in 1993-94 hard red spring wheat trials conducted by the North Central Research Center.

Variety or line	Minot			Off-station locations†	
	Fallow	Recrop‡	Notill	1993 (2)	1994 (4)
	bu/A				
<u>Conv. Ht.</u>					
Stoa	54.2	43.1	52.8	41.1	48.1
Butte 86	52.2	41.1	52.7	39.7	40.8
Amidon	51.9	42.4	52.4	36.6	37.8
Kulm	52.1	37.2	49.1	43.2	44.5
Ernest	50.9	41.4	52.2	41.2	43.4
<u>Semidwarf</u>					
2375	53.0	37.6	52.5	39.9	46.9
Prospect	56.6	35.8	53.8	47.7	50.9
Gus	54.4	35.8	50.2	34.6	40.4
Grandin	55.2	42.7	53.2	36.8	44.7
2371	53.5	37.7	52.5	41.4	42.1
Dalen	55.9	36.0	53.5	44.0	42.2
Norm	56.0	45.9	55.5	46.0	45.0

†Locations each year:

1993 - Harvey, York

1994 - Fessenden, Maddock.

‡1993 data.

Table 6. Summary of agronomic performance of selected entries in the 1993-94 hard red spring wheat trials conducted by the North Central Research Center.

Variety or line	Headed (6)†	Height (10)	Lodging score (4)	Leaf disease (5)	Test weight (10)	Grain yield (9)
	days	cm	0-9	%	lb/bu	bu/A
<u>Conv. Ht.</u>						
Stoa	67	103	2.0	42	58.5	49.2
Butte 86	63	93	0.7	62	59.4	46.2
Amidon	66	98	3.3	32	58.6	44.8
Kulm	62	97	0.7	69	60.4	46.5
Ernest	66	99	1.6	37	59.7	46.8
<u>Semidwarf</u>						
2375	64	89	3.9	60	59.1	47.7
Prospect	66	90	0.4	53	58.3	51.1
Gus	67	93	1.8	34	58.0	44.6
Grandin	64	89	0.4	64	59.6	47.6
2371	65	82	0.9	53	58.1	46.8
Dalen	64	80	0.6	53	59.5	48.0
Norm	65	86	0.4	36	58.1	50.5

†Number of tests each trait.

Table 7. Summary of agronomic performance of selected entries in 1994 hard red spring wheat trials conducted by the Hettinger Research Center.

Variety or line	Height (4)	Test weight (4)	Location - grain yield				
			Scranton	Selfridge	Regent	New Leipzig	- x (4)
	cm	lb/bu	bu/A				
<u>Conv. Ht.</u>							
Amidon	76	60.2	44.0	48.1	42.8	36.7	42.9
Kulm	73	61.7	37.3	56.3	47.9	36.9	44.6
Ernest	72	60.4	45.5	52.6	46.3	33.1	44.4
<u>Semidwarf</u>							
2375	69	60.3	50.6	59.2	50.5	36.8	49.3
Gus	67	59.5	47.8	50.0	49.9	35.8	45.9
Grandin	67	60.4	43.0	44.6	42.2	33.1	40.7
2371	63	58.7	49.4	57.0	49.0	35.3	47.7
Dalen	61	61.4	47.7	46.5	48.0	39.4	45.4
Krona	62	59.4	55.9	64.1	48.7	47.3	54.0
Norm	63	60.3	49.2	67.1	50.4	40.2	51.7
Sonja	62	59.4	44.4	64.7	56.0	39.6	51.2
McNeal	70	59.8	46.6	56.9	52.6	40.5	49.2
C.V.%			10.6	7.1	9.5	6.7	
LSD (.05)			7.4	5.7	6.7	4.3	



Table 8. Summary of agronomic performance of selected entires in the 1993 hard red spring trials conducted by the Williston Research Center (Lew vs. Ernest comparison).

Variety or line	Headed (4)†	Height (4)	Lodging (2)	Leaf disease (4)	Test weight (4)	Grain yield (4)
	days	cm	%	%	lb/bu	bu/A
<u>Conv. Ht.</u>						
Stoa	61	84	2	47	57.6	56.3
Amidon	61	78	2	33	57.7	59.1
Lew	63	84	66	45	59.1	48.4
Ernest	60	78	2	29	58.5	55.4
<u>Semidwarf</u>						
2375	59	75	28	58	58.0	60.2
Grandin	60	76	0	53	58.4	58.1
Norm	61	74	3	19	57.3	59.9
Rambo	63	72	1	45	58.1	51.4

†Number of tests each trait.

Table 9. Summary of agronomic performance of selected entries in the 1993-94 hard red spring wheat variety trial at North Dakota Agricultural Research Centers† (AC Eatonia vs. Ernest comparison).

Variety or line	Headed (6)‡	Height (6)	Lodging score (1)	Leaf disease (5)	Test weight (6)	Grain yield (5)
	days	cm	0-9	%	lb/bu	bu/A
<u>Conv. Ht.</u>						
Stoa	64	92	0.3	51	59.1	57.7
Amidon	65	90	0.3	40	60.1	57.5
CDC Teal	64	89	1.8	39	59.4	52.8
AC Eatonia	65	90	4.3	51	60.0	47.9
Ernest	64	90	0.3	41	61.1	56.4
<u>Semidwarf</u>						
Grandin	63	83	0	59	60.1	58.9
Norm	64	80	0.5	34	59.2	61.8
McNeal	66	83	0.8	37	59.5	64.6

†Dickinson, Hettinger, Williston, North Central

‡Number of tests each trait.

**Table 10. Stem cutting percentage (wheat stem sawfly) of selected entries in hard red spring wheat trials<sup>†</sup> conducted by the Williston Research Center, 1991 and 1992.**

Variety or Line	Williston sawfly nursery <sup>‡</sup>	
	1991	1992
	%	%
Stoa	88	76
Amidon	63	66
Grandin	90	68
Lew	13	13
Cutless	7	18
Leader	--	24
Ernest	17	26
LSD.05	24	14
CV%	18	22

<sup>†</sup> No stem cutting in 1993 and 1994 trials.

<sup>‡</sup> Visual estimates - 1991; actual stems cut by sawfly (%) - 1992

**Table 11. Summary of agronomic performance of selected entries in the Uniform Regional Hard Red Spring Wheat Nursery, 1993 and 1994.**

**1993**

Variety or line	Headed (15) <sup>‡</sup>	Height (16)	Lodging Score (7)	Rust <sup>†</sup>		Shattering (1)	Test weight (16)	Grain yield (17)
				Leaf (1)	Stem (1)			
	days	cm	1-9	%	%	%	lb/bu	bu/A
Stoa	34	100	2.9	10MR-MS	0	15	56.0	50.1
Butte 86	30	92	2.8	10MR-MS	5R-MR	5	57.4	52.8
Kulm	30	96	2.0	tR-MR	tR	15	58.3	52.7
Trenton	32	103	2.7	20MR	30MR-MS	5	57.3	49.4
Ernest	32	96	2.6	tR	0	5	56.9	46.2
F-test	52.6	70.0	4.3	--	--	--	13.3	8.7
LSD.05	0.9	3.0	0.9	--	--	--	1.2	5.5
CV%	3.7	4.8	30.4	--	--	--	3.2	16.3

<sup>†</sup> Data from field inoculated rust nursery, USDA-ARS, Cereal Rust Laboratory, St. Paul, MN.

<sup>‡</sup> Number of tests each trait

**1994**

Variety or line	Headed (18) <sup>‡</sup>	Height (19)	Lodging Score (7)	Rust <sup>†</sup>		Leaf Spotting (3)	Test weight (20)	Grain yield (20)
				Leaf (1)	Stem (1)			
	days	cm	1-9	%	%	%	lb/bu	bu/A
Stoa	27	92	3	5S	5R-MR	5	57.7	48.0
Butte 86	24	86	3	5S	10MR	8	59.4	47.8
Trenton	27	94	3	--	30MR-MS	9	59.0	47.2
Ernest	27	90	2	5MS-S	tR	22	59.0	42.6
F-test	49.9	99.9	3.4	--	--	1.8	12.6	16.1
LSD.05	0.8	2.0	1.2	--	--	24.4	0.8	2.9
CV%	4.4	3.9	47.3	--	--	95.3	2.2	9.9

<sup>†</sup>Data from 1994 rust nursery, USDA-ARS, Cereal Rust Laboratory, St. Paul, MN.

<sup>‡</sup>Number of tests each trait

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 FIELD PLOT VARIETIES  
 (2 YEAR AVERAGE, 8 LOCATIONS)  
 1992 AND 1993

TABLE 12  
 AVERAGES OF 2 YEARS  
 FARINOGRAM

3 HOUR FERMENTATION

VARIETY OR NUMBER	YLD BPA	TEST WT LB/BU	VIT	KER %	NO SEC	WHT		PROTEIN		FLR	WET	GLU	ASH	PEAK MIX			MIX	LOAF							
						FAL	14% MB	WHT	FLR					EXT	%	TIME MIN		TOL MIN	MTI BU	CLASS	ABS %	TIME MIN	DO	VOL CC	G-T
AMIDON	ND	61.2	88	412	14.5	13.8	69.2	42.7	0.38					8.7	14.0	27	5.7	67.1	1.70	9.8	851	8.1	8.2	10.0	10.0
BUTTE86	ND	61.4	84	420	14.8	13.8	68.8	43.3	0.39					9.9	10.6	28	5.4	69.3	1.55	9.9	841	8.2	8.5	10.0	9.7
GRANDIN	ND	61.8	85	408	14.9	14.0	70.6	40.2	0.40					9.8	20.2	19	6.9	68.4	1.85	9.9	839	8.1	8.2	10.0	9.8
LEN	ND	60.3	83	407	14.8	13.9	69.7	39.0	0.40					13.8	25.7	13	7.7	67.0	2.20	10.0	893	8.1	7.7	10.0	10.0
ERNEST	ND	61.9	68	388	14.4	13.8	69.9	41.3	0.38					12.1	15.7	26	6.7	64.5	1.75	10.0	840	8.1	8.5	10.0	9.5
STOA	ND	60.5	89	419	14.8	14.0	69.9	41.4	0.37					13.4	20.7	16	7.3	65.5	1.75	10.0	838	8.1	8.5	10.0	10.0

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ANALYTICAL, HILLING AND BAKING DATA  
FIELD PLOT VARIETIES

1994 CROP  
TABLE 13

**AVERAGES OF 3 STATIONS**

## PÄRINOGRAM

### 3 HOUR FERMENTATION

VARIETY OR NUMBER	YLD BPA	TEST WT	KER LB/BU	VIT	WHT PAL	WHT PROTEIN				FLR	WET	FLR	PEAK	MIX	LOAF	G-T	CB	CT	SYM				
						NO	SEC	WHT	FLR											EXT	GLU	ASH	TIME
AC DOMAIN	ND	60.5	98	433	15.3	14.6	67.6	44.8	0.44			8.7	24.2	13	7.3	63.8	1.75	10.0	852	7.7	7.8	10.0	7.7
AC EATONIA	ND	60.8	97	382	15.0	14.3	68.6	43.0	0.41			10.5	14.7	17	7.0	62.7	1.85	10.0	1027	9.0	8.7	10.0	10.0
AMIDON	ND	60.1	97	401	14.4	13.7	67.6	42.0	0.41			15.3	21.5	25	7.3	63.6	1.90	9.7	825	7.3	7.8	10.0	8.0
BERGEN	ND	59.9	86	400	13.4	12.6	70.1	36.6	0.43			17.7	19.5	18	7.7	63.3	1.90	10.0	850	8.0	8.2	10.0	8.7
BUTTE 86	ND	60.1	96	419	14.6	13.7	66.8	40.8	0.40			16.2	21.8	12	7.7	65.4	1.90	10.0	888	8.2	8.3	10.0	9.0
CDC MERLIN	ND	60.0	91	425	14.8	14.1	66.7	40.0	0.41			28.7	27.8	17	7.7AB	62.7	2.60	10.0	963	8.8	8.7	10.0	10.0
CDC TEAL	ND	59.9	95	418	15.4	14.7	67.7	42.8	0.40			28.8	32.3	12	8.0AB	63.2	1.90	10.0	1027	8.7	8.5	10.0	10.0
DALEN	ND	61.4	88	415	13.7	12.7	66.9	37.1	0.41			15.7	23.8	18	7.7	64.4	2.10	10.0	828	7.7	7.5	10.0	8.7
ERNEST	ND	61.1	90	362	14.3	13.4	68.8	39.5	0.38			13.0	28.0	13	7.3	59.9	2.10	10.0	870	7.8	8.3	10.0	9.7
EXPRESS	ND	59.0	88	366	14.0	13.4	66.7	40.5	0.43			15.7	22.5	13	7.7	63.3	2.00	9.7	845	7.0	8.0	10.0	8.3
GRANDIN	ND	60.2	96	416	14.2	13.4	68.7	38.6	0.42			26.2	29.7	17	7.3AB	64.9	2.60	10.0	873	8.2	8.0	10.0	9.0
GUS	ND	59.7	98	398	15.0	14.2	67.3	41.7	0.42			13.3	22.0	15	7.3	63.9	2.15	9.7	903	8.0	8.2	10.0	9.0
HANER	ND	60.4	83	426	13.9	13.3	69.4	37.7	0.42			18.8	31.8	12	7.3	60.9	2.35	10.0	932	8.0	7.5	10.0	9.7
KRONA	ND	58.9	92	407	13.0	12.1	69.0	35.1	0.40			19.3	23.8	18	7.3	59.5	2.35	10.0	885	8.0	7.7	10.0	9.0
KULM	ND	62.1	95	422	14.5	13.9	67.4	41.6	0.37			16.2	28.2	13	7.7	64.7	2.10	10.0	938	8.0	8.5	10.0	9.7
LARS	ND	58.7	94	441	13.2	12.6	67.1	33.3	0.43			30.5	24.7	13	7.0AB	59.4	2.75	10.0	893	7.8	8.0	10.0	9.7
LEN	ND	60.4	95	403	14.7	14.0	68.9	39.0	0.43			20.5	32.7	17	7.7	61.4	2.85	10.0	952	8.3	7.8	10.0	10.0
MCNEAL	ND	59.5	96	440	13.5	12.6	64.9	33.9	0.40			48.2	30.8	13	8.0AB	65.6	4.50	10.0	982	9.0	8.5	10.0	10.0
ND 674	ND	60.8	99	414	14.9	14.2	66.5	39.0	0.43			39.3	34.5	12	8.0AB	64.7	2.85	10.0	957	8.3	8.3	10.0	9.0
ND 678	ND	62.3	98	331	14.2	13.1	64.6	39.4	0.38			15.0	18.7	27	6.7	64.9	1.85	10.0	880	8.5	9.2	10.0	9.7
ND NOT DETERMINED																							

ND NOT DETERMINED

# 3 HOUR FERMENTATION

## FARINOGRAM

VARIETY OR NUMBER	YLD BPA	TEST WT	KER LB/BU	WHT FAL	WHT PROTEIN			FLR	WET	FLR	ASH %	PEAK MIX		ABS %	TIME		DO	VOL		G-T	CB		CT CL	SYM
					NO	SEC	WHT					FLR	EXT		GLU	MIN		TOL	MTI		BU	CLASS		
ND 586	ND	61.0	95	393	13.9	12.9	70.0	37.6	0.38			20.5	22.8	13	7.7AB	64.2	2.75	10.0	925	8.5	8.3	10.0	10.0	
ND 687	ND	62.9	ND	404	13.3	12.3	68.3	35.7	0.39			14.5	15.0	10	7.0	62.3	2.00	10.0	892	8.5	8.8	10.0	10.0	
NORLANDER	ND	60.8	98	432	14.2	13.7	65.0	38.7	0.39			22.2	26.0	10	8.0AB	67.0	2.35	10.0	1013	8.5	9.0	10.0	10.0	
NORM	ND	60.0	87	416	13.5	12.7	67.5	34.9	0.42			25.2	20.5	20	7.3AB	63.1	2.65	10.0	918	8.2	8.5	10.0	10.0	
RUSS	ND	61.0	94	389	13.8	13.2	67.2	39.2	0.40			17.5	26.8	13	7.7	64.1	2.50	10.0	887	7.7	7.7	10.0	9.0	
SHARP	ND	61.9	92	412	13.9	13.3	67.7	40.8	0.37			15.8	16.2	27	7.0	64.3	1.90	10.0	870	7.7	8.3	10.0	8.3	
SONJA	ND	58.9	94	391	13.5	12.8	68.3	36.0	0.40			24.8	19.3	27	7.0AB	62.7	2.60	10.0	948	8.2	8.5	10.0	10.0	
STOA	ND	59.5	97	423	14.6	13.9	66.2	40.0	0.39			20.2	29.7	13	8.0	63.0	2.35	10.0	868	7.7	8.2	10.0	8.3	
TRENTON	ND	60.5	95	415	13.9	13.2	67.5	36.6	0.38			24.2	23.2	10	7.7AB	63.3	2.85	10.0	892	8.2	8.3	10.0	9.0	
VERDE	ND	60.2	84	435	13.7	12.8	69.6	34.9	0.38			20.8	32.0	20	8.0	60.3	2.25	10.0	852	7.8	8.3	10.0	9.0	
2371	ND	58.7	92	387	14.4	13.4	68.6	39.5	0.42			19.0	22.3	17	7.0	61.9	2.25	10.0	940	8.0	8.2	10.0	9.3	
2375	ND	60.9	94	438	13.4	12.4	68.1	35.2	0.41			16.5	27.2	15	7.3	63.5	2.10	10.0	823	7.7	8.2	10.0	8.7	
2398	ND	60.5	88	387	13.1	12.6	69.1	35.3	0.44			20.2	20.3	17	7.3AB	62.1	2.50	10.0	913	7.8	8.8	10.0	9.0	

ND NOT DETERMINED

\*REASON FOR TABLE 3-- AC EATONIA, ERNEST AND MCNEAL GROWN AT 3 STATIONS.

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## EXHIBIT E - STATEMENT OF THE BASIS OF THE APPLICANT'S OWNERSHIP

Dr. Richard C. Frohberg, an employee of the North Dakota Agricultural Experiment Station and North Dakota State University, is a plant breeder who developed 'Ernest' the hard red spring wheat cultivar for which Plant Variety Protection is hereby sought. The employee by agreement and because of the condition of the use of facilities and funds of the North Dakota Agricultural Experiment Station and North Dakota State University has assigned all ownership rights to 'Ernest' hard red spring wheat to the North Dakota Agricultural Experiment Station and North Dakota State University.

North Dakota State University on behalf of the North Dakota Agricultural Experiment Station has assigned all ownership to the NDSU Research Foundation. The NDSU Research Foundation is a nonprofit corporation set up to own and manage the intellectual property of the North Dakota State University.